



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Admistrative Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,883	11/28/2006	Patrick Rondier	1200,748	6149
7590 Longacre & White Suite 240 6550 Rock Spring Drive Bethesda, MD 20817		02/11/2008	EXAMINER HOFFBERG, ROBERT JOSEPH	
			ART UNIT 2835	PAPER NUMBER
			MAIL DATE 02/11/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,883	Applicant(s) RONDIER ET AL.
	Examiner ROBERT J. HOFFBERG	Art Unit 2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 14 January 2008.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-4 and 6-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-4 and 6-24 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 14 January 2008 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Arguments

1. The applicant argues that originally presented claim 23 is patentable over Capriz et al. (US 6,661,658) in view of Strähle et al. (US 6,662,859) because these references fail to disclose that the manifold and the electronics are on the same side of the support plate. The examiner respectfully disagrees. Capriz et al. discloses the claimed invention of claim 23 including an inlet and an outlet on the same side as the electronics. Capriz et al. fail to disclose the manifold. The examiner using Strähle et al. to disclose an inlet and an outlet manifolds in an inlet and an outlet; and not, the location of the outlets relative to the electronics. As stated in the motivation to combine, the manifolds of Strähle et al. are being combined with the cooling device of Capriz et al. for the purpose of providing a means to connect a fluid circulation device to the cooling circuit.
2. Applicant's arguments with respect to claim 1-4 and 6-22 have been considered but are moot in view of the new ground(s) of rejection based upon the applicant's amendments.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 22 requires two circulation channels extending in different directions and turbulators in a junction of the two liquid circulation channels.

Drawings

4. Only a marked-up copy of figure 1 was received on 1/14/08. The corrected drawing without reference no. 97 has not been received by the office.
5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the channels extending in different directions and the junction (both of claim 22) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. On page 9, lines 22+, the specification discloses that "It]he water circulation channels 28 ... may also comprise turbulators 32." The specification clearly states that they are in the circulation channels, and not at a junction of the circulation channels. Figure 3 shows channels 28 formed with deflectors 31 and/or turbulators 32. The placement of the turbulators 32 in figure 3 is a graphic representation that the channels 28 can have turbulators 32 and not illustrating that the turbulators at a junction of two liquid circulation cooling channels that are extending in different directions was a known feature of the invention upon filing of the application.

Claim Objections

9. Claim 22 is objected to because of the following informalities: Claim 22 requires two circulation channels extending in different directions and turbulators in a junction of the two liquid circulation channels. The specification lacks corresponding terminology in the detailed written description and claim 22 lacks correspondence to support the claimed structure of two circulation channels extending in different directions and

turbulators in a junction of the two liquid circulation channels. Appropriate correction is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-2, 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658).

With respect to Claim 1, Capriz et al. teach a device for cooling power electronics comprising: a support plate (2) on which the power electronics are mounted, a first pressed metal plate (6) including liquid circulation channels (9) press-formed (Col. 4, line 11) in said first metal plate; wherein a cooling circuit by circulation of a liquid (10) is defined by said liquid circulation channels mounted directly or indirectly to the support plate. Capriz et al. fail to disclose that the first pressed metal plate is smaller than the support plate. It would have been an obvious matter of design choice for the first pressed metal plate is smaller than the support plate , since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

With respect to Claim 2, Capriz et al. further teach the cooling circuit comprises a liquid inlet channel (16), a liquid outlet channel (17) and said circulation channels (9) for the circulation of the liquid between the inlet channel and the outlet channel (claim 2).

With respect to claim 10, Capriz et al. disclose that liquid cooled heat sinks are made from aluminum, but fail to disclose that the first metal plate is made of aluminum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the first metal plate from a good thermal conducting metal of aluminum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

With respect to Claim 19, Capriz et al. in view of Pikovsky et al. disclose the claimed invention except for an alternator or alternator/starter for a motor vehicle. It would have been an obvious matter of design choice to use the claimed invention for cooling power electronics in any application including as an alternator or alternator/starter for a motor vehicle, since applicant has not disclosed that solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with cooling any power electronics device in any application.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Fukazu et al. (US 6,648,062).

Capriz et al. disclose the claimed invention except for deflectors. Fukazu et al. teach the cooling circuit comprises deflectors (19) situated in the liquid circulation channels (6) (claim 3). It would have been obvious to one of ordinary skill in the art at

Art Unit: 2835

the time of the invention was made to modify the cooling device of Capriz et al. with the deflectors of Fukazu et al. for the purpose of providing a means to guide the coolant flow (Col. 4, line 34).

13. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Pfeifer et al. (US 7,068,507).

Capriz et al. disclose the claimed invention except for turbulators. Pfeifer et al. teach the cooling circuit comprises turbulators (Fig. 7, 290a) distributed in the liquid circulation channels (see Fig. 7) (claim 4). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the turbulators of Pfeifer et al. for the purpose of providing a means to create turbulence for increased cooling of the cooling circuit.

14. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Pikovsky et al. (US 2003/0178182).

With respect to Claim 6, Capriz et al. teach a cooling device for cooling power electronics, comprising: a support plate (2) on which the power electronics (5) are mounted. a first pressed metal plate (6) including liquid circulation channel press-formed (Col. 4, line 11) in said first metal plate; wherein a cooling circuit for cooling by circulation of a liquid (10) is defined by said liquid circulation channel fixed directly to the support plate, said circulation channels facing the support plate to provide a closed-loop (see Fig. 2) fluid path extending between an inlet (16) and an outlet (17) of the cooling circuit, wherein the first pressed metal plate having the cooling circuit is fixed to the support plate by brazing (15 and Col. 3, line 57). Capriz et al. fail to disclose a plurality

of cooling channels and an orifice. It would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the circulation channels for increased cooling capacity, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Pikovsky et al. teach at least one orifice (Fig. 1, small holes in both 102 & 106) extending through both the support plate and the pressed metal plate. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the orifice of Pikovsky et al. for the purpose of holes for assembly of the cooling device to a mating part (para. 0022, lines 13-16).

With respect to Claim 7, Capriz et al. in view of Pikovsky et al. disclose the claimed invention except for a second intermediate metal plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to separate the support plate of Capriz into two layers having an a second intermediate layer between the support layer and first pressed metal plate, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

With respect to Claim 8, Capriz et al. further teach that the second metal plate (lower layer of 2) is flat (see Fig. 5), brazed (15 and Col. 3, line 57) to the first pressed metal plate.

15. Claims 9, 12, 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Strähle et al. (US 6,662,859).

With respect to Claims 9, 12 and 15, Capriz et al. disclose the claimed invention including the pressed plate is fixed directly by brazing (Col. 3, line 57) to the support plate (claim 12). Capriz et al. fail to disclose a metal manifold. Strähle et al. disclose a metal manifold (44) connected to the cooling circuit (28) (claim 9) and the support plate (27) carries the manifold (claim 15). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the manifold of Strähle et al. for the purpose of providing a means to connect a fluid circulation device to the cooling circuit.

With respect to Claim 23, Capriz et al. teach a device for cooling power electronics, comprising: a support plate (2) with a first side (2 top) on which power electronics (5) are mounted; a first plate (6) including a liquid circulation channel (9) formed in said first metal plate; at least one inlet (16) or outlet (17) extending on the first side of the support plate, wherein a cooling circuit (9) for cooling by circulation of a liquid (10) is defined by said liquid circulation channel. Capriz et al. fail to disclose a plurality of cooling channels and a manifold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the circulation channels for increased cooling capacity, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Strähle et al. disclose the inlet (44) and outlet (46) manifolds. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the

Art Unit: 2835

manifolds of Strähle et al. for the purpose of providing a means to connect a fluid circulation device to the cooling circuit.

Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Pikovsky et al. (US 2003/0178182), and further in view of Strähle et al. (US 6,662,859).

With respect to Claim 16, Capriz et al. teach a method of manufacturing a power electronics cooling device, comprising the steps of: producing a cooling circuit (9) by pressing (Col. 4, line 11) a first metal plate (6) to integrally and homogenously form liquid circulation channels in said first metal plate, brazing the cooling circuit on a support plate for the power electronics, brazing (Col. 3, line 57), on the cooling circuit, an inlet channel (16) and outlet channel (17) for a cooling liquid to provide a closed-loop (see Fig. 2) fluid path extending between an inlet channel and an outlet channel. Capriz et al. fail to disclose an orifice and a manifold. Pikovsky et al. teach producing at least one orifice (Fig. 1, small holes in both 102 & 106) through the metal plate (102) and a support plate (106). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the orifice of Pikovsky et al. for the purpose of holes for assembly of the cooling device to a mating part (para. 0022, lines 13-16). Capriz et al. in view of Pikovsky et al. fail to disclose a manifold. Strähle et al. disclose the inlet (44) and outlet (46) manifolds. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Pikovsky et al. with the

manifolds of Strähle et al. for the purpose of providing a means to connect a fluid circulation device to the cooling circuit.

With respect to Claim 17, Capriz et al. disclose the claimed invention except for a second intermediate metal plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to separate the support plate of Capriz into two layers having a second intermediate layer between the support layer and first pressed metal plate and provide an operation brazing to couple the first plate to a second intermediate plate and the second intermediate plate to the support plate, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Pikovsky et al. (US 2003/0178182) as applied to the above claims, and further in view of Miller (US 2,821,014).

Capriz et al. in view of Pikovsky et al. disclose the claimed invention except for a plating. Miller teaches said first metal plate (Fig. 2, aluminum alloy structural member) comprises a plating by co-lamination (Fig. 2, aluminum alloy filler metal). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Pikovsky et al. with the plating of Miller for the purpose of providing a composite structure for improved assembly of two aluminum alloy structural members without weakening the strength of the structural aluminum alloy parent materials that may be caused by a joining operation.

17. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Strähle et al. (US 6,662,859) as applied to claim 12 above, And further in view of Miller (US 2,821,014).

With respect to Claim 13, Capriz et al. in view of Strähle et al. disclose the claimed invention except a plating. Miller teaches said first metal plate (Fig. 2, aluminum alloy structural member) comprises a plating by co-lamination (Fig. 2, aluminum alloy filler metal). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Strähle et al. with the plating of Miller for the purpose of providing a composite structure for improved assembly of two aluminum alloy structural members without weakening the strength of the structural aluminum alloy parent materials that may be caused by a joining operation.

With respect to claim 14, Capriz et al. disclose that liquid cooled heat sinks are made from aluminum, but fail to disclose that the pressed and support plates are made from aluminum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate the first metal plate from a good thermal conducting metal of aluminum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

18. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Pikovsky et al. (US 2003/0178182), further in view of

Strähle et al. (US 6,662,859) as applied to claim 16, further in view of Fukazu et al. (US 6,648,062) and further in view of Pfeifer et al. (US 7,068,507)

Capriz et al. in view of Pikovsky et al. and further in view of Strähle et al. disclose the claimed invention except for deflectors and turbulators. Fukazu et al. teach the cooling circuit comprises deflectors (19) situated in the liquid circulation channels (6). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Pikovsky et al., and further in view of Strähle et al. with the deflectors of Fukazu et al. for the purpose of providing a means to guide the coolant flow (Col. 4, line 34). Capriz et al. in view of Pikovsky et al. and further in view of Strähle et al., and in view of Fukazu et al. disclose the claimed invention except for turbulators. Pfeifer et al. teach the cooling circuit comprises turbulators (Fig. 7, 290a) distributed in the liquid circulation channels (see Fig. 7). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Pikovsky et al. and further in view of Strähle et al. and further in view of Fukazu et al. with the turbulators of Pfeifer et al. for the purpose of providing a means to create turbulence for increased cooling of the cooling circuit.

19. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Fukazu et al. (US 6,648,062) as applied to claim 3, and further in view of Pfeifer et al. (US 7,068,507).

Capriz et al. in view of Fukazu et al. disclose the claimed invention except for turbulators. Pfeifer et al. teach the cooling circuit comprises turbulators (Fig. 7, 290a)

Art Unit: 2835

distributed in the liquid circulation channels (see Fig. 7) (claim 4). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Fukazu et al. with the turbulators of Pfeifer et al. for the purpose of providing a means to create turbulence for increased cooling of the cooling circuit.

20. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Miller (US 2,821,014).

Capriz et al. disclose the claimed invention except for a plating. Miller teaches said first metal plate (Fig. 2, aluminum alloy structural member) comprises a plating by co-lamination (Fig. 2, aluminum alloy filler metal). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the plating of Miller for the purpose of providing a composite structure for improved assembly of two aluminum alloy structural members without weakening the strength of the structural aluminum alloy parent materials that may be caused by a joining operation.

21. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Capriz et al. (US 6,661,658) in view of Pfeifer et al. (US 7,068,507) and further in view of Pikovsky et al. (US 2003/0178182).

Capriz et al. disclose a method of manufacturing a electronics cooling device, comprising the steps of: producing a cooling circuit by pressing (Col. 4, line 11) a first metal plate (6) to integrally and homogenously form liquid circulation channel (9) in said first metal plate, brazing (15 and Col. 3, line 57) the cooling circuit on said support plate

for the electronics. Capriz et al. fail to disclose turbulators and brazing a manifold and power electronics. Pfeifer et al. teach the cooling circuit comprises turbulators (Fig. 7, 290a) distributed in the liquid circulation channels (see Fig. 7) (claim 4). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. with the turbulators of Pfeifer et al. for the purpose of providing a means to create turbulence for increased cooling of the cooling circuit. Capriz et al. in view of Pfeifer et al. fail to disclose brazing a manifold and power electronics. Pikovsky et al. teaches brazing (para. 0018, line 10), on a cooling circuit (102), at least one manifold (116) for a cooling liquid (para. 0016, line 5) to provide a closed-loop fluid path (see Fig. 1) extending between an inlet channel and an outlet channel (112s & 114s) of the manifold. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling device of Capriz et al. in view of Pfeifer et al. with the manifolds of Pikovsky et al. for the purpose of providing a means to connect a fluid circulation device to the cooling circuit and using a brazing process to assure a fluid-tight connection. Capriz et al. in view of Pfeifer et al. and further in view of Pikovsky et al. fail to disclose power electronics. It would have been an obvious matter of design choice to use any electronics including power electronic that requires cooling for proper operation, since applicant has not disclosed that the power electronics solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with any type of electronic device requiring cooling.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pikovsky et al. (US 6,942,019) is the issued patent of US publication 2003/0178182. Mueller (US 6,935,412) discloses features of the claimed invention.
23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash Gandhi can be reached on (571) 272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

1/31/08 /Robert J. Hoffberg/ Examiner, Art Unit 2835

/Jayprakash N Gandhi/
Supervisory Patent Examiner, Art Unit 2835